Development of Disaster Response Competency Profile Indices (An Extended Version)

S.Tatsuki [1*]

[1] *Doshisha University (Kyoto, Japan)*

Abstract

This study aimed to identify observable and measurable behavior traits that were shared among highly competent disaster responders and to construct screening instruments that assessed disaster responder competency. Focus group interviews to competent experts in disaster responses were conducted in order to capture statements that typified competent disaster responders. Conceptual clustering of the statements produced three major competency categories and they were found to be associated with three major disaster response functions. Those were namely 1) incident commander competency, 2) management staff competency (Intelligence, Planning, and Logistics), and 3) operation competency. Four experts on each function/competency from the Kobe City Fire Department were interviewed in order to examine content validity of the competency statements/items. These validation interviews formed a basis to construct a preliminary multiple choice instrument to measure disaster response competencies. Two other types of instruments were simultaneously constructed, one a sentence completion questionnaire, the other a questionnaire that asked respondents to evaluate hypothetical cases on disaster response. Three different instruments measuring three different competencies were administered to fifty disaster responders at Kobe City Fire Department and thirty-three questionnaires were returned. Standard item analysis procedures were conducted and the best items representing each corresponding competency in each instrument were selected. Structural Equation Modeling (SEM) technique was applied to test construct validity of the refined instruments by analyzing multitrait-multimethod (MTMM) variance-covariance matrix data obtained from the selected items. The analysis results validated the construct validity of the refined instruments. The instrument was thereafter named the first version of Disaster Response Competency Profile Indices (DRCPI). Further validation studies of the DRCPI by comparing the results of the simulated disaster response exercises performed by the most competent teams of incident commander, staff, and operation personnel with those by teams composed of randomly assigned personnel were discussed as a future research direction.

Keyword: *Disaster Response Competency, Screening Instrument, MTMM experiment*

[*] S. Tatsuki, Department of Sociology, Doshisha University, Kamigyo-ku, Kyoto, Japan. tatsuki@gold.ocn.ne.jp

1. Introduction

This study aimed to identify observable and measurable behavior traits that were shared among highly competent disaster responders and to construct screening instruments that assess disaster responder competencies. At the first stage of the study, a group of seven expert emergency responders were invited to a focus group session. They had had experiences in effectively managing such emergency situations as the 1995 Kobe earthquake at the response and recovery phases, the prevention of the spread of BSE in Japanese cattle herds and the recent bird flu epidemic. Their statements were transcribed and conceptual clustering of the statements was conducted on the basis of semantic affinity. Three major mutually exclusive semantic clusters were formed. The first cluster consisted of competency statements related to job execution and attention to keeping an operational unit intact under any circumstance. The second cluster was characterized by statements related to information, intelligence and personnel as well as logistics planning. The third cluster contained statements related to organizational decision making. In order to relate these conceptual clusters to the standard emergency management functions, the Incident Command System was used as a template guideline. This revealed that the first cluster corresponded with operation competency, the second cluster management staff competency, and the third cluster incident commander competency.

In order to cross-validate the conceptual clustering and the functional interpretation of those competencies, four Kobe City Fire Department experts on each of the operation, management staff and incident commander functions were interviewed. These cross-validation interviews supported the three competencies as were extracted from the focus group session to be crucial in their work as operation personnel officer, management staff or incident commander on site or at the emergency operation center.

2. Method

Out of the above validation interviews, preliminary multiple choice items were produced to measure disaster response competencies. The instrument consists of three subscales; ten items were selected for operation (see Table 1), ten for management staff (see Table 2), and twelve for incident commander competency (see Table 3). Its response options were “Almost never true”, “Usually not true”, “It depends/Undecided”, “Usually true”, and “Almost always true”.

Two other types of instruments were simultaneously constructed; one a rating scale and the other a free-answer questionnaire. The rating scale questionnaire presented two particular responses/judgments made by each of operation personnel officers, management staff members, and incident commanders. Respondents were asked to evaluate each of those responses/judgments as being “Appropriate”, “Appropriate if certain conditions are met”, “Not appropriate if certain conditions exist”, or “Not appropriate”.

The free-answer questionnaire asked respondents to describe their own action as an operation personnel officer, a management staff and an incident commander in a hypothetical large-scale mountain fire incident. The first three scenarios were prepared for operation personnel, the next two for management staff, and the last three for the incident commander (see Table

5). The hypothetical scenarios presented in both rating and free-answer instruments were drawn partly from the interviews from Kobe City Fire Department experts as well as from ethnographic interviews with the 1995 Kobe earthquake emergency responders[1)].

The above three different instruments measuring three different competencies were administered to fifty disaster responders belonging to the Kobe city fire department and thirty-three questionnaires were returned. Return rates were equivalent among the three major disaster response functions: Eight questionnaires were returned from operation personnel officers, eight from management staffs, eight from field level incident commanders, and nine from emergency operation center level incident commanders.

3. Results and Discussion

3.1 Multiple-Choice Scale

Multiple-choice responses to thirty-two competency items (ten items for operation, ten for management staff and twelve for incident commander competencies) were analyzed using Dual/Optimal Scaling method (Nishisato, 1982), which was a kind of principal component analysis of categorical data. Like principal component analysis that provides optimized item weights or loadings by means of eigenvalue decompositions of item variance-covariance matrix, Dual scaling analysis produces an eigenvalue for each solution and its internal consistency reliability estimate as well as response option weights which maximizes the internal consistency reliability of a given item set. Unlike principal component analysis, however, Dual Scaling can detect both linear and non-linear relations that exist in the data set (Nishisato, 2007).

Multiple Choice Scale for Operation Competency: The ten-item operation competency scale showed a clear unidimensional structure (the first eigenvalue 4.746 being far bigger than the second eigenvalue 2.189) with high internal consistency reliability (Cronbach's alpha=.877). Ten operation competency items and their corresponding option weights were illustrated in Table 1. In general, a linear relation appeared between the successive response categories that were ordered from "Never true" and "Usually not true" through "It depends/Undecided" to "Usually true" and "Almost always true" on one hand, and corresponding Dual-Scaled response weights on the other. Exceptions were found in items 2 (I report my situation at every critical point when I engage in a mission), 3 (I make my own judgment about what I can do in the current circumstances), 6 (I can summarize aloud what is going on at the operation site), and 8 (I hang around and play with my team mates outside of the workplace). In these four items, higher operation competency responses were divided in a bipolar or non-linear manner. For example, item 2 (I report my situation at every critical point when I engage in a mission) elicited some competent respondents' choosing "Almost always true" while the others chose "Usually not true". These consistent bipolar/nonlinear response patterns characterized response patterns to items 3, 6, and 8 as well. Both linear and bipolar/nonlinear response pattern information was used to calculate the operation competency scale's high internal consistency reliability.

==========
Insert Table 1 (Operation Competency MC Scale Results)
==========

Multiple Choice Scale for Management Staff Competency: Dual Scaling analyses were conducted on the ten-item management staff competency scale. The analyses produced two solutions with the first solution with eigenvalue 5.054 (Cronbach's alpha=.891) and the second 3.168 (Cronbach's alpha=.760). The first solution assigned option weights in such a way that the weights were linearly associated with corresponding ordered categories. The second solution assigned higher positive weights to moderate responses such as "It depends/Undecided" and "Usually true" while both extreme responses such as "Usually not true" and "Almost always true" received negative values. Both solutions were kept for the final multitrait-multimethod confirmatory factor analyses. As will be discussed in the below, confirmatory factor analyses supported that the second rather than the first solution showed convergent validation with two other measures for management staff competency. Second solution response option weights for ten management staff competency items were therefore listed in Table 2.

==========
Insert Table 2 (Management Staff Competency MC Scale Results)
==========

Multiple Choice Scale for Incident Commander Competency: Dual Scaling analysis of the twelve incident commander competency items produced the first eigenvalue of 6.385 and its corresponding Cronbach's alpha 0.920 while the second eivenvalue was 5.707 and the Cronbach's alpha .900. The first solution linearly assigned option weights in accordance with the order of successive categories where "Almost never true" or "Usually not true" were assigned large negative values while "Almost always true" consistently received large positive values. The Dual-Scaled option weights for each of the twelve incident commander competency items were presented in Table 3.

==========
Insert Table 3 (Incident Commander Competency MC Scale Results)
==========

3.2 Rating Scale

In analyzing rating responses to hypothetical cases, the respondents' function (e.g., operation, management staff, or incident commander) was used as a criterion variable in order to explore particular response options that were associated with a given function. If items took values and the criterion variables were categorical, discriminant analysis would have been used. However, item responses and the criterion variable were both categorical in the current data set. Therefore, canonical correlation analysis of categorical data, one of Dual Scaling options, was employed (Nishisato, 1980). In this analysis, four functions were treated as criterion categorical variables while rating responses ("Appropriate", "Appropriate

if certain conditions are met", "Not appropriate if certain conditions exist", or "Not appropriate") to six hypothetical cases were treated as predictor categorical variables. This Dual Scaling analysis produced three dimensional solutions where the first solution (eigenvalue 3.104, Cronbach's alpha .775) assigned a large positive value for operation, the second (eigenvalue 2.364, Cronbach's alpha .659) both field and headquarter incident commander, the third solution (eigenvalue 2.179, Cronbach's alpha .618) management staff functions.

With regard to hypothetical situation responses (see Table 4), approval of the first two judgments (an operation officer suggesting to his superior about the replacement of an inexperienced doctor conducting triage and stopping a family member from dashing frantically into her burning house instead of engaging in fire-extinguishing activities) showed high positive loadings at the first solution which characterized operation competency. Reserved approval of the next two cases (management staff informing the incident commander about a nearby business leader residence and approving a veteran fire fighter being in charge instead of an inexperienced field commander) showed large positive loadings on the third solution along with that for management staff function. Disapproval of an incident commander parroting the municipality head's advice as the incident action plan as well as conditional approval of the incident commander persuading his team member to socialize more with his team members outside of workplace characterized incident commander function on the second solution. Those key option weights that characterized each function were printed in bold in Table 4.

==========
Insert Table 4 (Rating Scale Results)
==========

3.3 Free-Answer Scale

A series of a large-scale mountain fire scenarios was created, in which eight scenes were prepared to elicit critical judgments. At each scene, respondents were asked to describe what action or judgment they would make as operation personnel, management staff or incident commander. Their free-answer responses were then conceptually clustered and key response categories for each scene were created as shown in Table 5. These response categories were treated as dummy variables where a value of 1 was assigned to "yes" and 0 to "no" for a given response category/dummy variable. Responses to 21 yes-no (1 or 0) categories were then factor analyzed with varimax rotation. The four factor structure was chosen because of its high interpretability. Response category factor loadings were presented in Table 5.

One set of operation-related actions were loaded high on the first factor and their factor loadings were printed in bold. Those actions included asking for a direction and conveying it to the team and engaging in an action plan as a part of the unified operation units upon arrival to the incident site as well as calming down an excited member with a non-threatening manner when the member panicked at the site. The other set of operation-related

responses were loaded high on the third factor. Those included judgments to act or stand by as a unit as well as to solve difficulties by the team unit alone.

Most of the management-staff-related actions were loaded high on the second factor. Those included establishing the command structure before responding to equipment requests from an operation team, contacting and assisting the commander who seemed to have lost grasp of the common operational picture. Examining the seriousness of the situation when the team was separated and lost the communication with the rest of operation units also loaded high on the same factor.

Incident-commander-related actions loaded high on the fourth factor. Those actions included firmly pursuing the planned mission while maintaining command control in face of citizen protests against the operation as well as giving simple and clear directions for team control when taking a command with newly assigned team units.

==========
Insert Table 5 (Free Answer Scale Results)
==========

3.4 Multitrait-Multimethod Confirmatory Factor Analysis

Structural Equation Modeling (SEM) technique was applied to conduct confirmatory factor analysis for testing if the multitrait-multimethod (MTMM) structure fitted the observed variance-covariance matrix obtained from three measures on three different competencies. The MTMM structure assumed that each observed measure was influenced only by the corresponding trait and method factors and that the measure was not affected by any other trait or method factors. The overall goodness of the fit between the MTMM model and the data can be statistically analyzed by means of goodness-of-fit Chi-squared test: When p-value exceeds 5% in the goodness-of-fit test, then one cannot reject the hypothesis that the model fit the data. The Chi-squared statistic for the current MTMM model was 29.189 (df=25) and its p-value was .256 suggesting that the MTMM model fitted the data very well. Figure 1 illustrates the confirmatory factor analysis results of the MTMM structure fitted to the observed data.

==========
Insert Figure 1
==========

The MTMM structure implies that although different methods were employed to measure a given trait, the trait measures showed convergence in what they aimed to capture. At the same time, a measure for a given trait was demonstrated as being influenced only by the targeted trait and by the employed method and thus was clearly discriminated from the other traits or method factors. Both convergence and discrimination supported the construct validity of the instruments developed by the current study. Among the three instruments

developed for the study, the free-answer instrument required intensive coding work after data collection and thus was not practical for a large sample survey. As for the rating scale, because positions or functions of thirty three particular experts at Kobe city fire department were used as the criterion to select characteristic rating responses associated with each function (e.g., operation, management staff, or incident commander), the generalizability of function-specific rating responses still remains to be validated through further study. In contrast, the multiple-choice questionnaire scales showed high to moderate internal consistency reliabilities and their content validity was supported by the preceding focus group interview study. It is therefore concluded that the multiple-choice instrument which was thereafter named the first version of the Disaster Response Competency Profile Indices (DRCPI) should be used for application studies.

It should be noted again that the Dual Scaling second solution score was chosen as the multiple-choice measure for the management staff competency. This was due to the fact that the MTMM model using the first solution for the management staff competency showed lesser fit: The Chi-squared was 40.136 (df=25) and its p-value was .028 suggesting to reject the hypothesis that the model fitted to the data. Akaike's Information Criterion (AIC) index was 80.136 as opposed to the final model whose AIC was 69.189. Similarly, Root Mean Square Error of Approximation (RMSEA) was .138 while that for the final model was .072. In each index, the lesser value, the better fit it indicates.

The Dual Scaling first solution of management staff items assigned linear option weights to successive response categories (ordered from "Never true" and "Usually not true" through "It depends/Undecided" to "Usually true" and "Almost always true") and those who chose a very decisive answer key (i.e. "Almost Always True") to each question received high total scores. In comparison, those who opted for more modest or restrained responses (i.e., "It Depends/Undecided" or "Usually True") scored high on the second solution. Comparison of mean scores by functions on the first and the second solutions revealed that operation was the highest on the first solution while staff recorded the highest on the second solution. It should be reminded that all multiple-choice competency measure items were collected from focus group interviews with expert emergency responders and that the incident command system was used as a conceptual framework to cluster those items into three function categories. This may suggest that such aspects of management staff competency as information, intelligence and planning capabilities were more clearly demonstrated by operation officers rather than management staff members at the Kobe city fire department. Furthermore, Kobe city management staff seemed to engage in a kind of assistantship practices. In the free-answer questionnaire, management staff was characterized by such non-directive judgments as establishing contacts (a weight of 0.568) and assisting the ineffective commander (a weight of 0.397) rather than directly pointing out the commander's inappropriate decisions. In the case in which the on-site team requested more equipment, Kobe city management staff members at the emergency operation center were unlikely to respond to the request (a weight of -0.661) and rather were likely to halt the request until the higher rank commander arrived on the site (a weight of 0.595). It was, therefore, considered

that the second solution score as well as the rating and free-answer measures consensually captured a type of assistantship as the management staff common trait and that operation personnel held operation as well as strategic planning aspect of management staff competencies. In order to solve these issues, a criterion that was not based on work positions but on actual performance was needed. When competency items for each function showed high convergence with behavioral- or performance-based criterion measures in controlled experimental settings, the external validity of the competency measures would be well established.

4. Conclusion

Based on the content analyses of focus group interviews with expert emergency responders, the statements that typified the experts' judgment or behaviors were clustered based on the semantic affinity. In order to further clarify the functional definitions of experts' statements, the notion of North-American-born Incident Command System was introduced as a template to guide conceptual clustering process. In the end, three different functions of experts' competencies were abstracted. Those were operation, management staff and incident commander competencies. The study constructed three different types of operational measures for each of the abstracted competency. The current study demonstrated the construct validity of the emergency responding function competency measures by means of MTMM confirmatory factor analyses using a sample of thirty-three practicing fire department officers at Kobe city. The three distinct competencies were clearly discriminated and, at the same time, three different operational measures of the same competency were evidenced by high convergence. Among the three measures developed for the current study, the thirty three item multiple-choice measure, hereafter named the Disaster Response Competency Profile Indices (DRCPI), was recommended for future application studies.

Limitation on the external validity or the generalizability of the DRCPI was discussed. This was mainly due to the particularity in emergency practices shared among the sampled fire fighters who did not necessarily follow exactly the same style of emergency management structure as the incident management system. It was obvious that more research efforts were needed in order to examine the external validity of the DRCPI. A future research direction, therefore, includes investigating the predictive validity of the instrument. This will be achieved by comparing the results of the simulated disaster response exercises performed by the most competent team as measured by the DRCPI with those by teams that are composed of randomly assigned subjects. This type of simulation experiments could utilize performance-based rather than work-position-based criterion to evaluate the external validity of the scale.

References

Nishisato, S. (1980) Dual Scaling and Its Applications. Toronto: University of Toronto Press.

[1)] The author deeply thanks Mr. Yasuyuki Urata who used his expertise in ethnographic interview with the 1995 Kobe Earthquake emergency responders and created both rating and free-answer instrument items.

Table 1 Operation Competency Items and Their Dual-Scaled Option Weights

Operation Competency Items	Response Options and Their Weights				
	Almost Never	Usually Not True	It Depends /Undecide	Usually True	Almost Always
1) I not only do what I am told to do, but also initiate my own action if necessary.	0	-0.669	-0.909	-0.171	0.547
2) I report my situation at every critical point when I engage in a mission.	0	0	0.279	-0.909	0.607
3) I make my own judgment about what I can do in the current circumstances.	0	0.677	0	-0.971	0.718
4) I know the direction toward which operation teams as a whole are geared.	0	-1.655	-0.680	0.004	1.006
5) I judge what my team can do according to the entire operation plan.	0	0	-1.343	-0.515	0.777
6) I can summarize aloud what is going on at the operation site.	0	0	0.415	-0.811	0.785
7) I am prepared to come to work at any time.	0	0	-0.565	-0.617	0.556
8) I hang around and play with my team mates outside of the workplace.	-0.233	-0.208	0.482	-0.101	0.192
9) I grasp the skill of each team member.	0	0	-1.097	-0.601	0.787
10) I make suggestions to my superior about matters that are beyond my job descri	0	-1.244	0.072	0.176	0.852

Table 2 Management Staff Competency Items and Their Dual-Scaled Option Weights btained from the Second Solution

		Response Options and Their Weights				
	Management Staff Competency Items	Almost Never True	Usually Not True	It Depends /Undecided	Usually True	Almost Always True
1)	I use my own imagination to prepare for any possible risks in the situation.	0	-2.020	-0.417	0.580	-0.549
2)	I prioritize the management of such time consuming matters as personnel and vehcles before I make other on site decisions.	0	0	-0.108	0.283	-0.558
3)	I communicate the information thinking how its recipients will react.	0	-0.512	0.206	0.435	-0.983
4)	I sort and summarize varous information provided at the time of crisis.	0	0	-0.756	0.548	-0.737
5)	I pick up the most critical information according to the crisis situation.	0	0	0.947	0.187	-0.667
6)	I have an expert knoledge and understand professional jargon in emergency situation.	0	-1.665	0.431	0.170	-0.677
7)	I can explain the situation effectively to those who have different backgrounds from me.	0	-1.784	0.727	0.180	-0.789
8)	I can fully utilize personnel and material resources both within and outside the organization that I belong to.	0	-1.066	0.629	-0.289	-0.617
9)	I keep my cool so that I can make rational judgements about the situation.	0	-2.162	0.494	0.357	-0.783
10)	I make suggestions to my superior commander when it is nesessary.	0	0	0	0.254	-0.145

Table 3 Incident Commander Competency Items and Their Dual-Scaled Option Weights

		Response Options and Their Weights				
Incident Commander Competency Items		Almost Never True	Usually Not True	It Depends /Undecided	Usually True	Almost Always True
1)	I make quick decisions for the entire organization.	0	-2.751	-1.285	-0.237	0.988
2)	I can understand where the situation is moving to and grasp a bird's eye view of the operations.	0	-2.751	-1.095	-0.178	0.687
3)	I can move the entire operation under my command.	0	-2.751	-0.715	-0.026	0.801
4)	I can control the situation and act as a commander in chief.	0	0	-1.164	-0.380	0.773
5)	I can keep my cool when I make decisions in an emergency situation.	0	0	-0.971	-0.097	1.035
6)	I can delegate those parts of the operation that are clearly described.	0	0	0.028	-0.385	0.537
7)	I am tough both physically and mentally.	0	-2.751	-0.743	0.337	0.938
8)	I have a loud voice.	0	0	-0.518	-0.301	0.501
9)	I am optimistic.	-2.751	0	-0.893	-0.331	1.015
10)	I pay sensitive attention to personnel relations.	0	0	-0.513	-0.623	0.916
11)	I feel empowered to change the organization that I belong to.	-0.910	-0.604	-0.062	0.758	1.167
12)	I can negotiate face-to-face with representatives from other organizations or departments.	-0.910	-1.566	-0.142	0.293	1.131

Table 4 Dual Scaling Results of Rating Questionnaire Responses Using Responders' Function as a Criterion Variable

Items		Scaled Weights			
		Appropriate	Appropriate if certain conditions are met	Not Appropriate if certain conditions exsit	Not Appropriate
Operation					
	Mr.A is an ambulance team member. He noticed that a medical doctor on the incident site was not conducting proper triage due to lack of knowledge. Mr. B. suggested to his superior commander that the doctor should be replaced.	**0.490**	**0.296**	-2.280	-0.578
	Mr. B is a firefighter team leader raised his voice to stop a family member dashing into her burning house and told his team members to take her out of the site. This action caused a delay in fire extinguishing operation.	**0.262**	-2.349	-0.563	0
Management Staff					
	Mr. C is an emergency management center staff supporting the incident commander who is fighting against a moderate size fire in a residential area. Mr.D noticed that a home of one of the most influencial business leaders is nearby the incident site an	-0.300	**0.967**	-0.477	-0.566
	Mr. D was supporting a field commander managing several teams at a flooding incident site. Mr. E overheard that a veteran firefighter insisting that he was more experienced in this situation and therefore he should be granted the power to commad the t	0	**0.732**	**0.241**	-0.078
Incident Commander					
	Mr. E took an incident commander position in order to manage an onset of serious infectious desease. The head of the municipality gave some advise to him when he was asked to take the responsibility. Mr. F thought the advise being quite valid and th	-0.230	-0.228	-0.125	**0.792**
	In order to raise a sense of teamwork, Mr. F, a team leader, tried to pursuade a less sociable member to spend more time with his team members outside of work.	-0.626	**0.505**	-0.240	-0.279

Table 5 Factor Analysis Results of Free-Answer Questionnaire Responses (Varimax Rotation)

Questions	Categorized Answers	Factor1 Operation1	Factor2 Management Staff	Factor3 Operation2	Factor4 Incident Command	Communality
You have arrived at the incident site as a four-member team leader with very limited prior information except location and general information about the nature of the incident. Various organizations and personnels are gathering to the site, however, things are chaotic at the moment. As a team leader, you will...						
	1) Engage in activities as a four member team	0.005	-0.014	**0.888**	-0.181	0.821
	2) Stand by at a staging area	-0.012	-0.115	**0.541**	0.279	0.384
	3) Ask for a direction and covey it to the team	**0.859**	-0.074	0.047	-0.102	0.757
	4) Engage in an action plan as a part of unified operation units	**0.627**	-0.056	0.157	0.056	0.425
As soon as you started activities, one of your team members was panicked and attempted to initiate action without your command. As a leader, you will …						
	1) Calm down the excited member with a non-threatening manner	**0.768**	-0.138	0.327	-0.082	0.722
While engaging in the mission, your team was separated from the incident commander and the other teams. You cannot communicate to them either. As a leader, you will…						
	1) Solve the current problem by our own selves	0.250	0.116	**0.654**	-0.131	0.521
	2) Examine the seriousness of the situation	0.030	**0.579**	**0.327**	-0.536	0.730
Consider that you are now at the emergency management center supporting the operation as a management staff. Before the incident commander arrives at the site, you have received the request for more equipments from an on-site team. You have not yet grasped the full view of the situation. You will...						
	1) Respond to the request	0.035	-0.661	-0.024	-0.041	0.441
	2) Establish the command structure before responding to the request	-0.272	**0.595**	0.017	-0.116	0.442
Consider that you are at the incident site and assisting the incident commander as his management staff. You noticed that the commander participated in a particular operation unit and his decesions to other teams began being inappropriate. As a management staff, you will...						
	1) Contact the commander.	0.391	**0.568**	-0.096	-0.041	0.487
	2) Assist the commander.	0.162	**0.397**	-0.345	0.087	0.310
Consider that you are the incident commander for this event with five or six teams under your control. A turmoil occurred at the incident site because the commander of the other emergency organization gave directions that are different from yours. As a commander, you will...						
	1) Emphasize that I am in charge.	0.222	-0.464	-0.361	-0.025	0.396
	2) Unify the commanding structure.	0.065	-0.510	-0.013	-0.212	0.310
Consider that you are the incident commander for this event. The media broadcasted a news that was very critical to your decision leasing a civic protest against your operation. This turmoil affected your command control. As an incident commander, you will...						
	1) Open a press conference.	-0.257	-0.199	-0.201	-0.698	0.633
	2) Conduct public relation activities through media.	-0.548	-0.250	-0.081	-0.179	0.401
	3) firmly pursue the mission as planned.	-0.284	-0.093	0.208	**0.553**	0.439
	4) maintain command control.	0.255	0.210	-0.179	**0.680**	0.603
You are put into a situation where you take a commad with newly assigned team units, none of those team leaders are familiar to you. As a commander, you will…						
	1) Present an incident action plan	-0.450	0.037	0.273	0.008	0.279
	2) Give simple and clear directions.	-0.128	-0.287	-0.141	**0.578**	0.453
	3) Put the teams under control.	-0.071	-0.295	0.041	**0.126**	0.110
	4) Examine skills and expertise of team leaders.	-0.192	-0.038	-0.325	-0.083	0.151
	Eigenvalues	3.096	2.578	2.194	1.944	
	Variance Accounted For (%)	14.7%	12.3%	10.4%	9.3%	

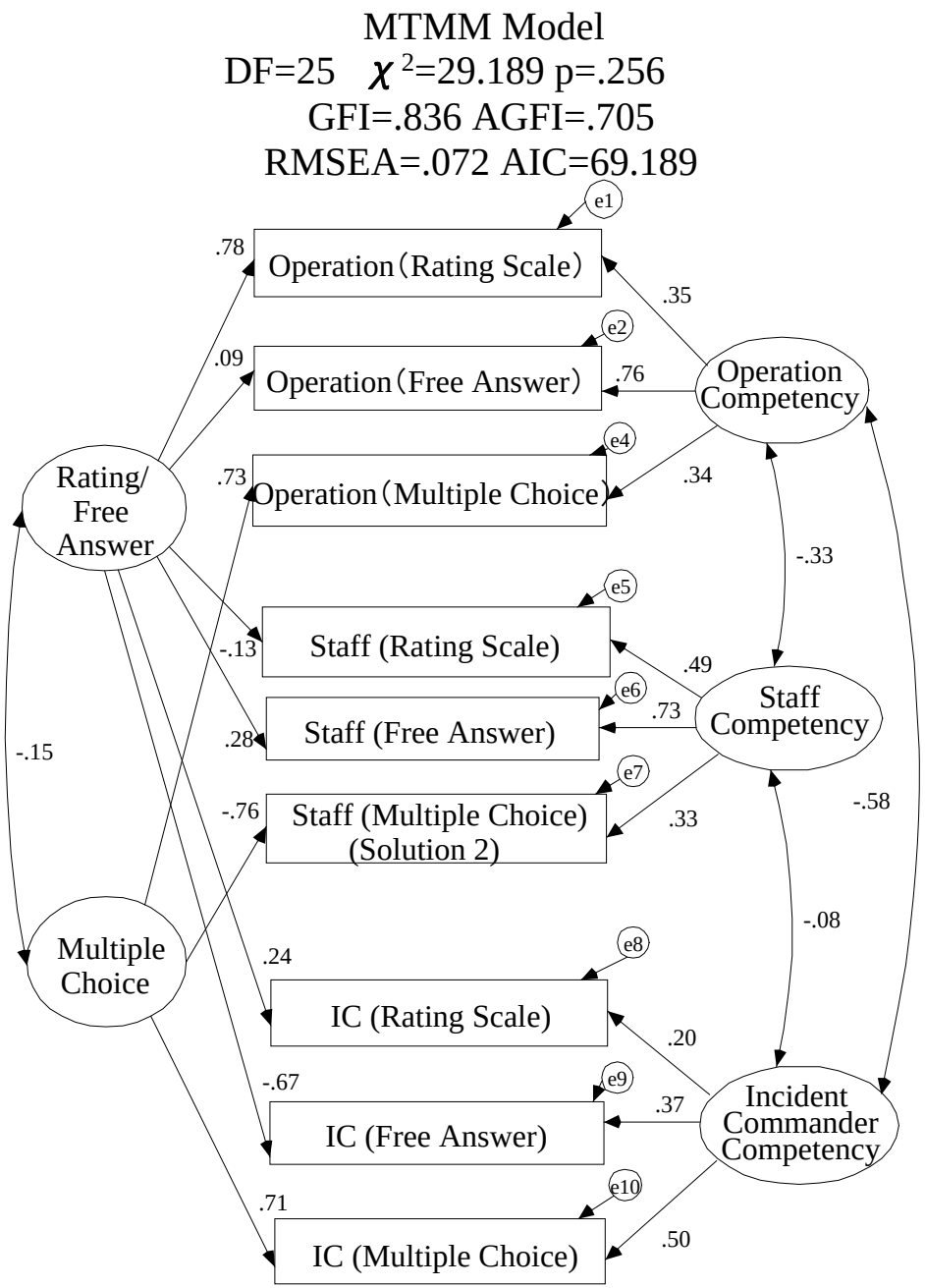

Figure 1 Multitrait-Multimethod Matrix Confirmatory Factor Analysis Results